REMARKS/ARGUMENTS

The present amendment is in response to the final Office Action mailed December 1, 2003, in which Claims 1 through 10, 13, 14, 17 and 18 were rejected. Applicants have thoroughly reviewed the outstanding Office Action including the Examiner's remarks and the reference cited therein. The following remarks are believed to be fully responsive to the Office Action and, when coupled with the amendments made herein, are believed to render all claims at issue patentably distinguishable over the cited references.

Claim 1 is amended herein. Claims 11, 12, 15, 16, 19 and 20 are cancelled. No claim is added. Accordingly, Claims 1 through 10, 13, 14, 17 and 18 remain pending.

All the changes are made for clarification and are based on the application and drawings as originally filed. It is respectfully submitted that no new matter is added.

Applicants respectfully request reconsideration in light of the above amendments and the following remarks.

CLAIM REJECTIONS - 35 U.S.C. SECTION 103(a)

With respect to Paragraphs 1 and 2 of the Office Action, the Examiner rejected Claims 1 through 10, 13, 14, 17 and 18 under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 5,973,901 to Narita et al. (hereinafter referred to as "Narita et al.") in view of U.S. Patent No. 4,870,530 to Hurst et al. (hereinafter referred to as "Hurst et al.").

Applicants respectfully request reconsideration of the rejection insofar as it is respectfully submitted that Claims 1 through 10, 13, 14, 17 and 18 are nonobvious in view of Narita et al. and Hurst et al.

The structure of the claimed electrostatic discharge protective device is different from the structure of the protection elements, including the thyristor T1 disclosed by Hurst et al. and by Narita et al. For example, as shown in Claim 1 of the present invention, the triggering device of the protective device is placed between the second pole and the first node. However, Narita et al. disclose, in Figure 9, an electrostatic discharge protective device comprising a thyristor element T1 connected to a pad 1 and a common discharge line 10, a diode D10 connected to the thyristor element T1 in parallel, and a diode D1 connected to the thyristor element T1 in parallel. The protection element comprises not only the diode D10 but also the diode D1, wherein the diode D1 connected to the pad 1 and the common discharge line 10. The structure of the claimed electrostatic discharge protective device is not disclosed by Narita et al. in view of Hurst et al.

The discharge current flowing through the claimed protective device, as shown in Claim 1 and FIG. 3 of the claimed invention, is different from the current path of the protection elements disclosed by Narita et al.

When an ESD stress having a positive polarity with respect to Pad 1 arises at Pad 2 of the claimed invention, the ESD discharge current flows from Pad 2, through the triggering device, i.e., the zener diode Z2, for lowering the trigger voltage of the thyristor, i.e., the SCR, the common discharge line 330 and another triggering device, i.e., the zener diode Z1 coupling to Pad 1, to Pad 1

before the SCR coupling to Pad 2 is turned on. After the SCR coupling to Pad 2 is turned on, the ESD discharge current flows from Pad 2, through the SCR coupling to Pad 2, the common discharge line 330 and the zener diode Z1, to Pad 1.

When an ESD stress having a negative polarity with respect to Pad 1 arises at Pad 2, the ESD discharge current flows from Pad 1, through the triggering device, i.e., the zener diode Z1, for lowering the trigger voltage of the SCR, the common discharge line 330 and the zener diode Z2, to Pad 2, before the SCR coupling to Pad 1 is turned on. After the SCR coupling to Pad 1 is turned on, the ESD discharge current flows from Pad 1, through the SCR coupling to Pad 1, the common discharge line 330 and the zener diode Z2, to Pad 2.

Regarding to the semiconductor circuit device disclosed by Narita et al., in Fig. 6, if a positive over-voltage is applied to the signal input terminal 3 with respect to the ground terminal 1 as a reference point, current does not flow through the internal circuit 20. The current starts to flow through the protection element which is connected to the signal input terminal 3 so that the protection element is triggered. As a result, a clamp element, i.e., the bipolar element Q3, connected to the input terminal 3 operates to clamp the voltage to Vsbp. In this case, the current path is the input terminal 3 → the clamp element Q3 of the input terminal 3 → the common wiring pattern 10 → the diode D1 of the ground terminal 1 → the ground terminal 1.

When a negative over-voltage is applied to the signal input terminal 3 with

respect to the ground terminal 1, some current flows because the impedance of the internal circuit 20 is low. However, a temporary high voltage is applied to the protection diode D1 of the ground terminal 1. The high voltage functions as a trigger to the thyristor element T1 so that the clamp element, i.e., the thyristor element T1 of the ground terminal 1 is set to the conductive state to clamp the voltage to Vsbm. In this case, the discharge current flows through a discharge path of the ground terminal 1 → the thyristor element T1 of the ground terminal 1 → the common wiring pattern 10 → the diode D3 of the signal input terminal 3 → the input terminal 3 (col. 6, lines 25-61). The discharge current does not flow through the diode D10 when a negative over-voltage is applied to the signal input terminal 3 with respect to the ground terminal 1. However, regardless whether the polarity with respect to Pad 1 arising at Pad 2 is positive or negative, the discharge current flows through the diode Z1 and diode Z2 of the claimed invention. The discharge current of the claimed invention is different from the current path of the protection elements disclosed by Narita et al.

Regarding FIG. 9 disclosed by Narita et al., a diode D10 having a low reverse direction breakdown voltage (3V in this example) is provided in parallel to the thyristor element as the clamp element. When a negative electrostatic voltage pulse is applied to another terminal, e.g., the power supply terminal 2 with respect to the ground (GND) terminal 1 as a reference point, the diode D10 is first broken down at the voltage Vtpm. The current functions as a trigger current so that the thyristor element is set to the conductive state to clamp

voltage to Vsbm. However, because the breakdown voltage Vtpm is smaller than the breakdown voltage of the diode D10, the thyristor can be reliably set to the conductive state before a lot of current flows through the internal circuit 20 (col. 7, lines 11-27). Although the diode D10 is provided in parallel to the thyristor element disclosed by Narita et al., the discharge current of the claimed invention is different from the current path of the protection elements disclosed by Narita et al.

According to the current path of the discharge current, the diodes D1- D3 are necessary elements of the protection elements disclosed by Narita et al. For example, if the diode D3 is omitted, the discharge current cannot flow through the diode D3 of the signal input terminal 3. The intended purpose, disclosed by Narita et al., to make the discharge current to flow through the diode D3 until the power supply voltage is unsatisfactory if the diodes D1-D3 are omitted.

The structure and the discharge current of the claimed protective device and that of the protection elements disclosed by Narita et al. are different. Therefore, even if the details of the thyristor T1 of the electrostatic discharge protective device disclosed by Narita et al. and the details of the thyristor element T1 disclosed by Hurst et al. are similar to each other, Claims 1 through 10, 13, 14, 17 and 18 are patentable. It is very difficult, perhaps impossible (and, hence, nonobvious), to obtain the structure of the claimed electrostatic discharge protective device according to a structure disclosed by Narita et al. in view of the structure disclosed by Hurst et al.

Reconsideration and withdrawal of the rejections under 35 U.S.C. Section

103(a) are respectfully requested.

ENTRY OF AMENDMENT AFTER FINAL

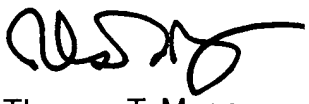
It is respectfully submitted that the present amendment should be entered in accordance with the provisions of 37 C.F.R. Section 1.116 on the grounds that: (1) The claims as now presented are in better form for appeal purposes, if necessary; (2) no new issues have been raised; (3) and, moreover, the present amendment is believed to place the application in condition for allowance.

CONCLUSION

In light of the above amendments and remarks, Applicants respectfully submit that all pending Claims 1 through 10, 13, 14, 17 and 18 as currently presented are in condition for allowance. If, for any reason, the Examiner disagrees, please call the undersigned attorney at 248-433-7552 in an effort to resolve any matter still outstanding *before* issuing another action. The undersigned attorney is confident that any issue which might remain can readily be worked out by telephone.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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